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'Post – Award' Governance Framework for Public Private Partnerships in Urban Infrastructure in India

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'Post-Award' Governance Framework for PPP's in Urban Infrastructure in India

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Foreword

Several countries have adopted Public Private Partnerships (PPPs) for delivery of infrastructure and other public goods and services. In India, the last two decades have seen a significant growth in these models with an estimated thousand PPPs already awarded. While several initiatives and reform practices such as standardised contract frameworks, establishment of state PPP cells, etc. are being undertaken to support the growth and sustenance of PPPs, attempts to streamline processes have focussed on award systems, and to a limited extent on monitoring mechanisms.

Given the long term nature of these projects, a number of them continue to face uncertainties and implementation challenges that arise 'post project award'. Project implementers are at times slow to foresee risks that may arise over the project lifecycle. This, coupled with the absence of a strong governance framework to measure, monitor and regulate project outcomes, have watered down the efficiency and innovation gains associated with PPPs. Here, a strong post award governance framework appears to be the key to efficient and sustainable implementation of PPPs.

Recent initiatives of both Central and State Governments of India, such as the Smart Cities programme and Swacch Bharat Mission reinforce the importance of investing in urban infrastructure in Indian cities. This will require greater private sector participation, both in terms of technical as well as financial partnership. Urban infrastructure as a segment has several unique characteristics, including greater revenue and cost volatility, greater influence of community interface, greater variability of Concessioning Authority maturity (ULBs), and participation of multiple levels of Government in various capacities across the project life cycle. All these translate to a complex governance structure, which needs to pre-empt key risks and devise strategies accordingly.

This study seeks to assess the issues and challenges faced by the project implementers, after 'project award' in the sectors of water supply and sewerage, solid waste management and urban transport. Based on such challenges and influencers, it develops a framework to assess causal linkages between various contextual elements (such as institutional maturity, project linked contextual elements, contracting structures and project governance) to a spectrum of outcomes (such as financial sustainability, effectiveness, acceptance and flexibility). It further attempts to identify the mechanisms or strategies that must be adopted to ensure effective, efficient and sustainable implementation of PPPs in these sectors, through a case study based assessment of select ongoing PPPs in Urban infrastructure sectors.

We hope that this work will be taken forward by policy makers and implementing agencies, and influence future programmes in this space.



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Abbreviations

ASCI	Administrative Staff College of India
ATMs	Automated Teller Machines
BOO	Build Own Operate
BOOT	Build Own Operate Transfer
BOT	Build Operate Transfer
CA	Concession Agreement
CAD	Computer-aided Design
CAG	Comptroller Auditor General
CBICL	Cochin Bridge Infrastructure Limited
CCMC	Coimbatore City Municipal Corporation
CDP	City Development Plan
CEE	Centre for Environment and Education
CIWMC	Coimbatore Integrated Waste Management Company Pvt. Ltd
CMSC	Central Monitoring & Sanctioning Committee
COD	Date of Commission/ Commercial Operation Date
CP	Conditions precedent
CPHEEO	Central Public Health and Environmental Engineering Organisation
CPT	Cochin Port Trust
CSMC	Central Sanctioning and Monitoring Committee
CSWM *	Coimbatore Solid Waste Management
CTTS	Comprehensive Traffic and Transportation Study
DBFOT	Design Build Finance Operate Transfer
DEA	Department of Economic Affairs, Government of India
DGCA	Directorate General of Civil Aviation
DPR	Detailed Project Report
EPC	Engineering Procurement Construction
ESR	Elevated Service Reservoir
GCDA	Greater Cochin Development Authority
GDP	Gross Domestic Product
GIS	Geographic Information Systems
GoK	Government of Kerala
GoM	Government of Maharashtra
GoTN	Government of Tamil Nadu
HPEC	High Power Expert Committee Report
IBRD	International Bank for Reconstruction and Development
IDeCK	Infrastructure Development Corporation (Karnataka) Limited
IDFC	Infrastructure Development Finance Company
IEC	Information Education Communication
IPA	Investment Program Agreement
JICA	Japan International Cooperation Agency
JnNURM	Jawaharlal Nehru National Urban Renewal Mission
JV	Joint Venture
KL	Kilo litres
KPIs	Key Performance Indicators
KRFB	Kerala Road Fund Board
KSRTC	Kerala State Road Transport Corporation
KUIDFC	Karnataka Urban Infrastructure Development and Finance Corporation
KUWASIP*	Karnataka Urban Water Supply Improvement Project
KUWSDB	Karnataka Urban Water Supply and Drainage Board
LMC	Latur Municipal Corporation
LPCD	Litres per Capital per Day
LWMC	Latur Water Management Company
LWS*	Latur Water Supply
MJP	Maharashtra Jeevan Pradhikaran
MLPD	Million Litres per Day
MMC	Madurai Municipal Corporation
MMWPCPL	Madurai Municipal Waste Processing Company Private Limited
MoUD	Ministry of Urban Development
MSW	Municipal Solid Waste
MSWM	Madurai Solid Waste Management
MT	Metric tonnes
NESL	Nagpur Environment Services Ltd.
NGO	Non-governmental Organisation
NMB*	New Mattanchery Bridge
NMC	Nagpur Municipal Corporation
NPV	Net Present Value

NRW	Non Revenue Water
NWS *	Nagpur Water Supply,
O&M	Operations and maintenance
OECD	Organisation for Economic Cooperation and Development
PAG	Post-award Governance
PAPD	Previous Annuity Payment Date
PBT	Profit Before Tax
PMC	Pune Municipal Corporation
PPPs	Public Private Partnerships
PSWM *	Pune Solid Waste Management
PWD	Public Works Department
QCA	Qualitative Comparative Analysis
QCBS	Quality and Cost-based Selection
RBDCK	Roads and Bridges Development Corporation of Kerala
RCC	Reinforced Cement Concrete
RDF	Refuse Derived Fuel
RFP	Request for Proposals
RFQ	Request for Qualification
ROW	Right of Way
SCADA	Supervisory Control And Data Acquisition
SLF	Sanitary Landfill Facility
SPCD	Scheduled Project Completion Date
SPML	Subhash Projects & Marketing Ltd.
SPV	Special Purpose Vehicle
TBS*	Thavakkara Bus Station
TCRIP	Trivandrum City Road Improvement Project
TMC	Thiruvananthapuram Municipal Corporation
TNUFIDCL	Tamil Nadu Urban Financial Infrastructure Development. Corporation Limited
ToR	Terms of Reference
TPD	Tonnes per Day
TRDCL	Thiruvananthapuram Road Development Company Limited
TRIDA	Thiruvananthapuram Development Authority
UFW	Unaccounted for Water
ULBs	Urban Local Bodies
UNDP	United Nations Development Programme
VfM	Value for Money
VGF	Viability Gap Funding
WPI	Wholesale Price Index
WSMP	Water Supply Master Plan
WSSF	Water Supply and Sanitation Fund
WTP	Willingness to Pay

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Executive Summary

Recent initiatives of both Central and State Governments Government of India, such as the Smart Cities programme and Swacch Bharat Mission reinforce the importance of investing in urban infrastructure in Indian cities. This will require greater private sector participation, both in terms of technical as well as financial partnership. Urban Infrastructure as a segment has several unique characteristics, including greater revenue and cost volatility, greater influence of community interface, greater variability of Concessioning Authority maturity (ULBs), and participation of multiple levels of Government in various capacities across the project life cycle. All these translate to a complex governance structure, which needs to pre-empt key risks and devise strategies accordingly.

In this study, we develop a framework for assessing the relationship between several causal variables and PPP outcomes. These causal variables are structured into three buckets – institutional factors, project specific factors and governance/ interface management aspects. PPP outcomes include both objective and quantitative factors, such as financial sustainability and service levels, as well as subjective and qualitative factors, such as project legitimacy and adaptability.

This framework is then populated with live case data from a set of nine case studies of Public Private Partnerships in urban infrastructure sectors (Solid Waste Management, Water and Urban Transport). Assessment of these case studies through a conjunctive causality tool (Qualitative Comparative Assessment) helps identify key causal pathways to specific outcome sets. Through this set of preliminary findings, we hypothesize key contributory factors to improve performance of Public Private Partnerships, particularly from a governance perspective.

We find that strengthening the cognitive orientation of the concessioning authorities emerges as the most powerful pathway to stable and successful projects, followed by normative inputs to augment the decision making ability of such project awarding agencies. On a more operational note, we observe a strong correlation between positive project outcomes and features such as financial buffers and enhanced project management practices.

While these findings are based on a small set of case studies, it is instructive to see that the outcomes are by and large recognized by policy makers and implementation agencies as being indicative of their larger experience on other urban infrastructure projects. One of the most evident takeaways from this exercise would be to institutionalize the assessment of all ongoing PPPs, to periodically validate causal linkages between various input factors and project outcomes. For instance, the merits of adaptable contracts (to mid course market dynamics) is an area of significant debate today. A continuous assessment of projects on such a framework will enable implementers to arrive at data based answers to such fundamental structural questions, while also streamlining implementation linked mechanisms.

Given that the PPP model is expected to contribute significantly to the stock of urban infrastructure projects over the next two decades, such an assessment would serve to inform policy and implementation on a real time basis and improve the risk profile of the space.



Need for Post Award Governance of Public Private Partnerships

4.1 Evolution of PPPs in Urban Infrastructure in India

The creation of urban conglomerates, driven by natural economic and social drivers must be accompanied with improved supply of basic social services in water supply, waste management and energy, accompanied with transport and logistics infrastructure to allow greater mobility. This transition needs to be constantly supported with efficient management, effective governance and sustainable finances. The ability to create such an enabling environment in order to support the continuity, efficiency and effectiveness of urban services is a challenge faced by most countries. For India, particularly, the rising number of cities, increasing urban population and, poor technical, managerial and financial capacity of the local government bodies makes the challenge of meeting urbanisation requirements even larger.

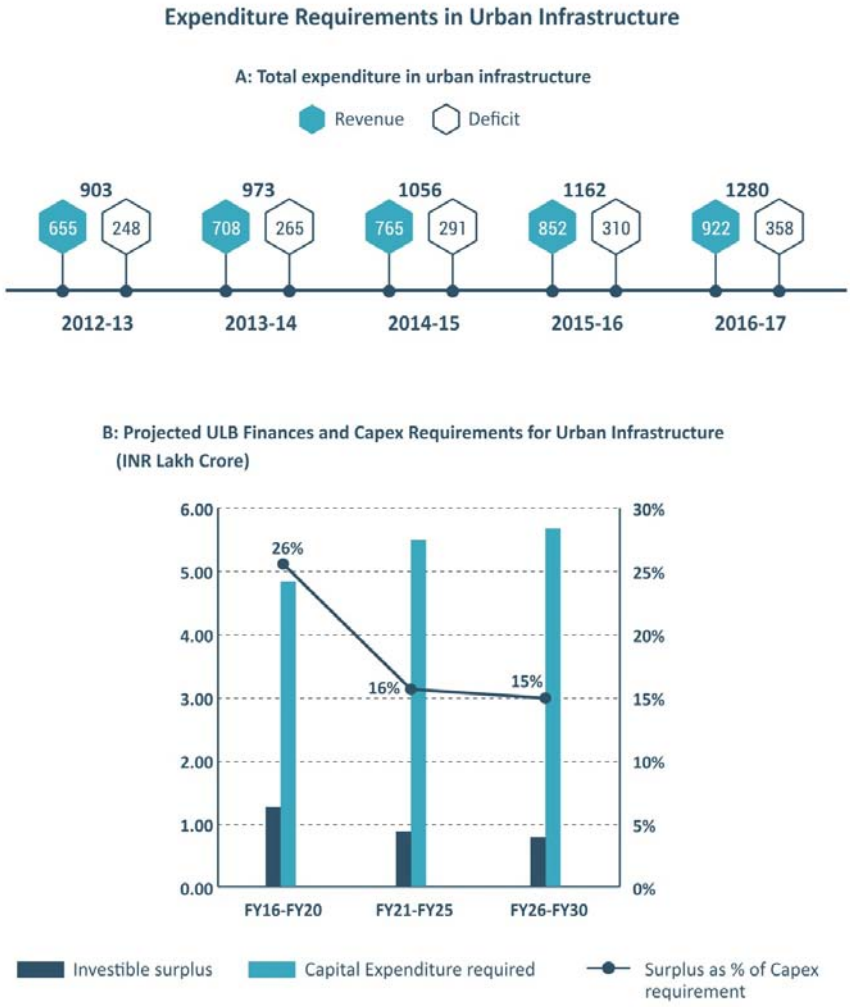
The Government has experimented with a number of models to build the required infrastructure and provide services to meet the rising demands of the urban population. With the 72nd Amendment to the Constitution, urban local bodies have been empowered with the technical, managerial and financial responsibilities of providing urban infrastructure. Solid waste management, water supply and sewerage and urban transport constitute about two third[1] of estimated investments in urban infrastructure. While most states have adopted a decentralised approach across all sub sectors of urban infrastructure[2]; sub sector specific variations exist.

Water supply and sewerage has continued to remain under the purview of both the State and the local body. State water boards are responsible for sourcing and transmission of water while the local bodies control the distribution and operation of water supply. With these institutional reforms, most of the local bodies maintain their roads, water supply and sewerage infrastructure through annual maintenance contracts or engineering-procurement-construction contracts; with the para-statal agencies playing a limited role in planning and designing works. Municipal solid waste is managed entirely by the local governments. All these sectors have witnessed significant under investment over the past decades, on account of low cost recovery. This has reduced the quality of services (adjusted to per capita levels), resulting in further reduction of willingness to pay and invest.

However, new methods have been explored to circumvent the vicious circle within which these local bodies function. The past decade has witnessed increased participation of the private sector beyond construction and short-term service contracts, by bringing in their technical expertise and finances. Private sector participation is expected to increase over the years to offer efficient and effective services. Before understanding the type of private sector models that have been adopted in urban infrastructure, it is instructive to consider the basis for increase in the private sector's role in the ecosystem.

[1] Based on UIG and UISSDM progress reports
[2] Urban infrastructure includes sectors of water supply, waste management, sewerage, urban transport, roads, storm water drains and street lighting. The PPP projects considered under urban infrastructure are not only those implemented by the urban local bodies, but also include projects implemented by state agencies such as development authorities and water boards.

The High Power Expert Committee Report (HPEC) indicates that between 2012-13 and 2021-22, the country would require a combined capital and operations expenditure of INR 6.08 lakh crore (2009-10 prices) to cater to the new investment requirements in urban infrastructure as well as to maintain the existing infrastructure. In order to meet these expenses, it is estimated that the urban local bodies will be able to generate about 72% of the revenue through taxes and other sources, such as transfers from the Centre and State and other forms of user charges. However, the remaining 28% of the expenditure; which also accounts for about 0.52% of the GDP is expected to be met through other sources of financing such as pooled finances, public private partnerships, etc. Moreover, nearly 60% of these capital investments and operational expenses would be required in the sectors of water supply, sewerage, waste management, urban roads and transport. The lack of capacity within the local bodies to operate and manage projects as well as the deficit in the future revenue to meet the expenditure levels, establishes the assumption that more PPPs are likely to be adopted in the near future to cater to the grappling needs of India's urbanisation.



Before evaluating the initiatives being undertaken by the government and other stakeholders to allow smooth awarding of PPPs and managing them 'post-award', it is necessary to understand the trends in PPP practices in urban sectors. According to the PPP India

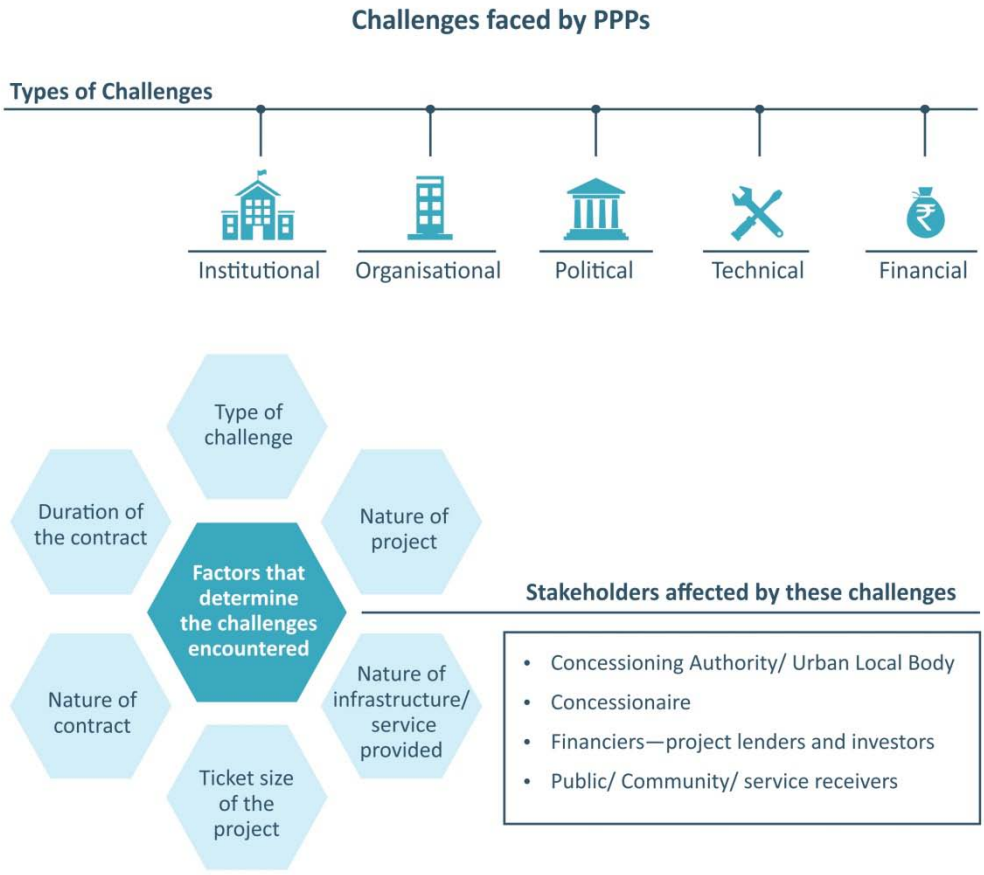
database, as of October 2013, there are around 181 PPP projects in 'urban development' (covering all other sectors except urban roads), valued at INR 99,363 crores at various stages of project implementation. While there is no database that provides statistics on the PPP projects in the urban roads sector, a few of those high in value have been included in the 'roads' sector of the database. These include, the Karur Toll Bridge and East Coast Road in Tamil Nadu, Vadodara–Hallol Toll Bridge in Gujarat, Bikaner Bypass Road in Rajasthan, Trivandrum City Road Improvement Project in Kerala, among others.

Of the total projects in 'urban development', an estimated 40% of them are in the operational stage. While one cannot draw an obvious trend amongst the type of PPPs and their scope in these sectors, there have been different combinations within their value chain that have been adopted as PPPs. Typically, functions with a direct interface with the end consumer (such as distribution for water, primary collection for solid waste and toll collection for roads) have been slow to be taken up as PPPs, on account of community buy in, and collection risks. These risks have defined both the ring fencing of project scope, and the structures deployed for urban infrastructure projects.

With a significant fraction of these PPP projects being at an operational stage, their complexity and long term nature poses a challenge for managing these projects and ensuring sustainability and efficiency of services. The last decade saw volumes of initiatives being undertaken by the government to address this daunting challenge. These include the implementation of the Jawaharlal Nehru National Urban Renewal Mission (JnNURM) which supported the local bodies with funds and capacity building. However, a number of PPPs have faced issues in implementation, particularly in areas of community acceptance, land acquisition, fee justification/ collection and cost recovery.

4.2 Challenges faced by PPPs

There is limited research that addresses and attempts to mitigate the challenges faced by PPPs post-award (Delhi and Mahalingam 2013). Five types of challenges are encountered by PPPs in urban infrastructure (Seddon and Mahalingam 2014, Delhi and Mahalingam 2013):



Institutional challenges cover legislative and normative aspects. Long drawn regulative processes and legislative delays account for some legislative challenges. Normative aspects are benchmarks that are not mandated but provide legitimate pathways (e.g. model concession agreements, procurement best practices and toolkits). The difference between legislative and normative factors lies in the ability of legislative factors to bear a legal binding. Absence of verified benchmarks in service delivery, model concession agreements and best practices in project delivery are instances of normative challenges. The fundamental difference between regulative and normative challenges is the legal enforceability of regulative aspects. In particular, projects that involve the acquisition of land for developing the assets have been particularly vulnerable to challenges which arise from lack of enforceability of commitments.

Organisational challenges are concerned with the organisational culture of the concessioning authority/ urban local body. These include the capacity of ULBs to understand PPPs, develop complex contracts that also allow for appropriate adaptability, delegate projects to a deserving third party and deal with uncertainties in a relatively new sector such as urban infrastructure. Capacity and awareness building among concessioning authorities can reduce the risk of organisational challenges. For instance, our study finds cases of Urban Local Bodies (e.g. Coimbatore Solid Waste Management project) where the presence of a project champion at a sufficiently senior level has aided in the smooth execution of the project and mitigation of organisational challenges.

Political challenges arise out of ascertaining the legitimacy of a project, in the eyes of the community to which the service is being provided. Some political challenges also reflect on the organisational aspects—such as the disposition of an urban local body towards PPPs, in the event of a political regime (as well as attitudinal) change. Water supply projects are one of the most susceptible sectors to political challenges, given the public goods nature of water as well as lack of clarity with respect to PPPs and privatisation of water. Constructive IEC campaigns ensuring transparency in governance and pilots to assess the relevance of the project are ways of mitigating this challenge, as in the case of the Nagpur Water Supply Project.

Some of the common financial challenges include, inability of the stakeholders (concessionaire, concessioning authority and the community) to ensure a project's financial sustainability, honour the financial obligations of the contract, such as financial recovery of the concessionaire, sufficient resource provision by the concessioning authority, such as viability gap funding (VGF) and honourable exit of financiers. Furthermore, the inappropriate structuring of projects (poor assessment of demand uncertainties and compensation systems) and allocation of risks also result in financial challenges that eventually increase the probability of restructuring or even the termination of projects. These require either structural reforms in the sector impacting project viability directly or creation of assurance mechanisms to provide financial buffers from external sources (for instance, the Trivandrum City Roads Improvement Project developed a Road Fund in order to address financial challenges).

Technical challenges include issues relevant to the execution of and sustained performance of the project. These include the experience of the concessionaire to perform in the specific sector as well as function within a PPP structure, which is relatively new in urban infrastructure. Furthermore, the evolving technical capabilities in the sector throw up challenges with respect to project scope and execution. This is best reflected in solid waste management, where technological developments create sharp inflections in cost structures and viability. The Pune solid waste management project, for example, tried to deal with the challenge of ever-changing technology by distributing its risks across technologies—by introducing decentralised treatment units, the ULB is given the flexibility to experiment with emerging technologies, as well as reducing the probability of obsolescence in the technology employed.

The level of exposure and degree of impact of these challenges on the stakeholders depends on multiple factors, including,

a. **Nature of the challenge:** In most cases, a financial challenge is quantifiable, more tangible and can be anticipated to a larger extent than political challenges that are difficult to compute or anticipate
b. **Nature of the project:** Our interactions with the stakeholders indicate that PPPs involving greater interface with the end-user, especially with respect to billing and collection of user fees, tend to be riskier and hence pose greater challenges especially to the concessionaires and financiers
c. **Nature of infrastructure/service provided:** Providing public goods such as urban infrastructure are riskier compared to private goods such as toll roads, since

determining their accessibility, usability and most contentiously, the valuation of user fees corresponding to the service being provided is difficult in the case of public goods because of their non-excludable[3] and non-rival nature

d. **Project value:** Larger the cost of the project, the more challenges it is expected to face, in terms of financial complexity, the scale of execution and cost recovery
e. **Duration of the contract:** Often, longer the duration of the concession, the riskier the project, because it is difficult to establish the types, frequency and intensity of the risks across the life of the project
f. **Type of contract:** Management contracts versus full-fledged concessions/BOTs. Furthermore, the presence of clauses regarding performance, conditions precedent, etc. also has the scope to mitigate challenges encountered by the PPPs.

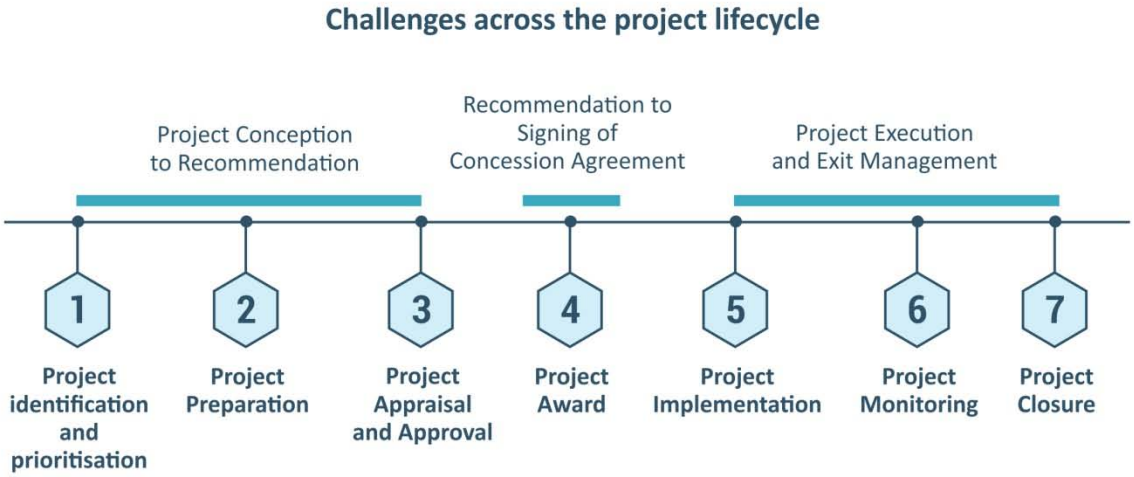
Furthermore, the very nature of a PPP shifts service expectations versus public services. It is often assumed that if a service is being provided through a PPP mode, its quality must be compulsorily superior to those provided by the public authorities. Challenges arise when these expectations are unmet, primarily because the rationale for executing the project as a PPP could have been financial or political rather than technical.

Challenges encountered in PPPs in urban infrastructure, across stakeholders have been summarized below

	Concessionaire	Concessioning Authority	Public
Technical	Constant changes in technology and absence of benchmarks	Limited technical capacity of local government bodies to execute the projects	Absence of benchmarks and standards against which the projects can be monitored
Financial	Long-term nature of urban infrastructure projects coupled with uncertainties in cost recovery	Absence of financial buffers such as viability gap funding to financially sustain projects Skewed distribution of risks	Poor willingness to pay for public good services
Institutional	Regulatory bottlenecks that cause delays in implementation Transfer of assets at the end of the concession period	Absence of technical and/or advocacy support from domestic agencies	Absence of best practice precedents that can throw light on transparency in governance practices
Organisational	Lack of an established practice of PPPs that affects the interactions between concessioning authority and concessionaire	Poor capacities of local government officials in understanding, executing and managing these projects	Legitimacy concerns born out of frequent regime changes that result in governance irregularities
Political	Ensuring equitable and effective accessibility to the service	Obtaining the acceptance and support of the public towards executing the project as a PPP	Acceptance of rehabilitation of existing infrastructure

[3] Non-excludability refers to the impossibility of excluding any individuals from using the good. Though attempts are put in place to penalize service consumers who

These challenges also manifest themselves at various points across the project life-cycle. PPPs, given the large degree of uncertainty (Delhi and Mahalingam 2013) in terms of the limitations in envisaging all the requirements throughout the project life-cycle, at the time of project award, can be labelled 'incomplete contracts' (Hart 2002).



Project Lifecycle	Presence of challenges								
	Institutional			Project Characteristics			Project Governance/ Interface Management		
	Regulative	Normative	Cultural cognitive	Experience	Uncertainty/ complexity	Contract structures	Internal	External	Public
Project identification and prioritisation		✓	✓				✓		
Project preparation	✓	✓	✓				✓	✓	✓
Project appraisal and approval	✓		✓	✓	✓		✓	✓	✓
Project implementation		✓	✓	✓		✓	✓		✓
Project monitoring	✓	✓	✓			✓	✓		
Project closure			✓		✓	✓			

Note: Indicative mapping of the presence of challenges across these factors based on inputs from case studies



Post Award Governance Framework for Public Private Partnerships in Urban Infrastructure

5.1 Defining Governance

To mitigate the challenges faced by public private partnership projects, governance strategies should be inbuilt within the system. Before considering different types of governance mechanisms, it would be useful to understand the definitions and characteristics of good governance as well as its applicability to post – award PPP issues.

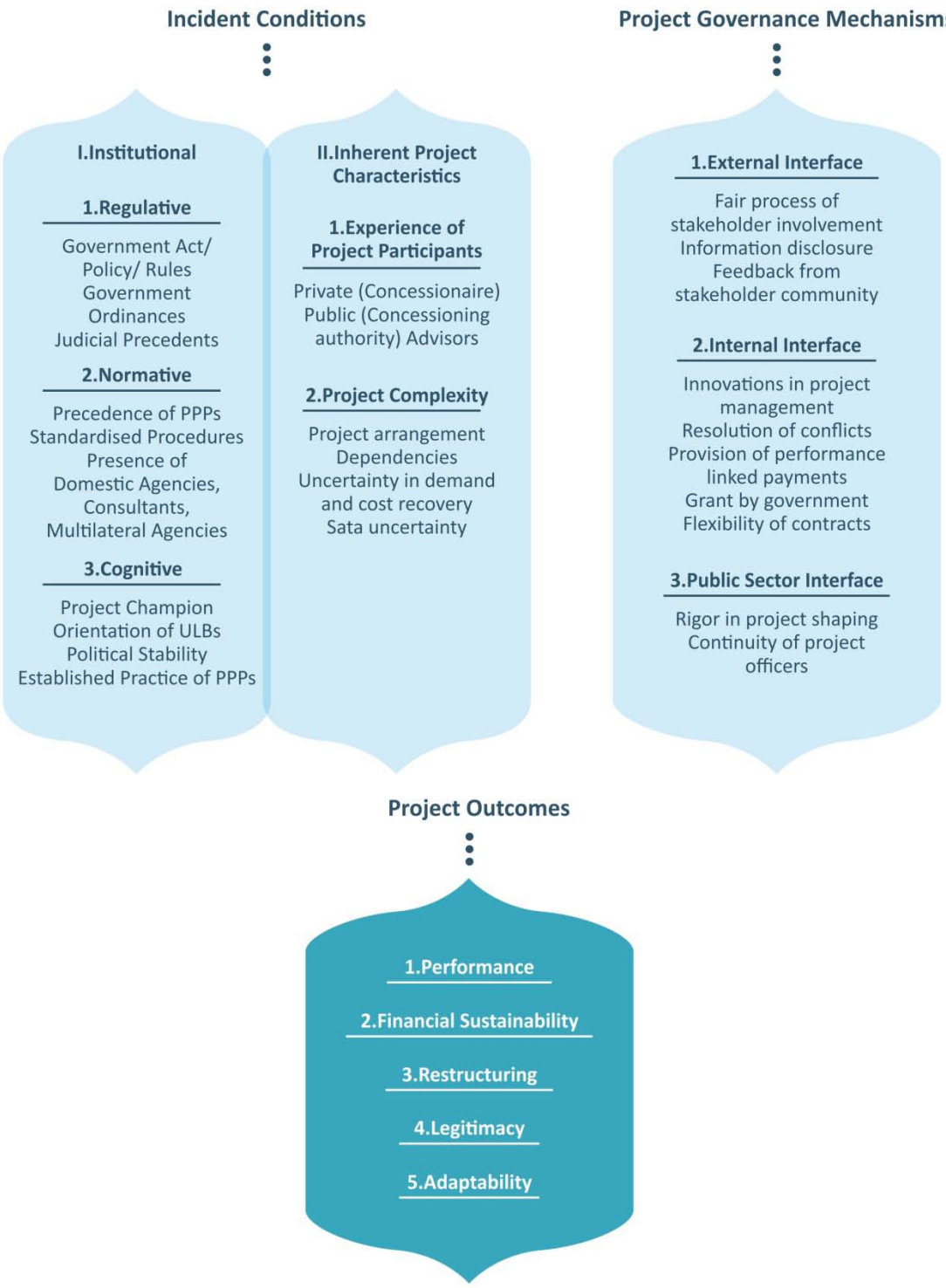
According to the World Bank, governance (as opposed to "good" governance) is defined as the rule of the rulers, typically within a given set of rules. It is a *process* - by which the authority makes rules, enforces them and modifies them. This implies that understanding governance requires an identification of the authorities or rulers and their respective rules, as well as the various processes by which these rules are selected, defined and linked together and with the society generally. These processes of governance could be categorised as either good or bad based on parameters such as its eventual impact on the society or the fairness by which it is implemented and/or enforced and among others. While there are many competing views on what the term 'good governance' should mean, some experts and international organisations have attempted to define it based on the characteristics that it sought to possess.

UNDP considers good governance being, among other things participatory, transparent and accountable. It is also effective and equitable. And it promotes the rule of law. The OECD elaborates on this by including (some but not all) these into good governance: strengthening of anti-corruption measures, democratization, decentralization and local government reform, increased civil-society participation in development, and respect for human rights and the environment.

With respect to PPPs, good governance is defined by the ability to steer projects through various unforeseen events and uncertainties. Alignment of incentives of various stakeholders toward project goals is another such mechanism. In this report, governance is captured through various mechanisms inbuilt within the PPP eco-system that would have an impact on project performance 'post-award'. This framework has been adapted for the urban infrastructure context, from a framework developed by IIT Madras for general infrastructure. The next section provides a brief of this framework and its customisation for the urban infrastructure sector. It establishes the rationale for these mechanisms and defines them, which together, form the post-award governance framework for PPPs.

5.2 Developing the 'post-award' governance framework for PPPs

Exhibit: Post Award Governance Framework



The section below highlights the factors considered under each leg of the framework – incident conditions, project governance mechanisms, and project outcomes. Each of the components, along with corresponding metrics has been assigned weights based on a Delphi methodology through a series of consultations with subject matter experts.

Incident Conditions

I. Institutional

Institutional elements range across establishing legislative mechanisms such as Acts and policies for PPPs, developing standardised processes and the orientation of the agencies towards implementing agencies. These elements form the broader spectrum of the PPP eco-system and are applicable to a wider range of projects that fall within the ambit of the government. The three main categories amongst the institutional elements are regulative/legislative, normative and cultural cognitive.

1. Regulative Elements

Governments (centre/state/local) issue rules in infrastructure, PPPs, or sectors related which may regulate the implementation process, etc - and hence must be adhered to, are considered as regulative elements. A clear rule framework will set the stakes in balance for the private player, while providing predictability and transparency for decisions. The concessionaire would know what is expected and how he/she needs to go about with the entire process, and it enables expectations among the project participants to be set right, reduces misunderstandings and provides comfort to government agencies to justify their actions if something goes wrong. Further, it helps government agencies to follow a process, to avoid remedies and rectification in future, thereby helping them to take defensible decisions. In the absence of an Act or a policy, a government order backing the project is a necessary condition. For urban infrastructure projects implemented through the PPP route, the Draft PPP Policy 2012 at the Centre along with the Draft PPP Rules, 2013 would be applicable. Apart from these, State PPP policies; State municipal infrastructure acts; sector level policies such as MSW Rules, 2000 and the government orders released by the implementing agencies (state departments for most cases) are considered.

Category	Metrics	Scoring Rubric
Legislations	Act was enacted at the pre-award stage of the project. Supplemental Acts were enacted at the pre-award stage of the project.	1
	Act was enacted at the post-award stage of the project. Supplemental Acts were enacted at the pre-award stage of the project.	0.8
	Act was enacted at the post-award stage of the project. Supplemental Acts were enacted at the post-award stage of the project	0.6
	Act was enacted at the pre-award stage of the project. Supplemental Acts were enacted at the post-award stage of the project.	0.4
	Act was enacted at the post-award stage of the project. No Supplemental Acts	0.2
	No specific acts for the project. Existing Acts do not support PPP	0
Government Ordinances	Government order released during project identification/conceptualisation stage with activities and technical specifications mentioned	1

	Government order released during project identification/conceptualisation stage with only list of activities mentioned	0.83
	Government order released during project identification/conceptualisation stage with no details mentioned	0.67
	Government orders issued after project award with activities and technical specifications mentioned	0.50
	Government orders issued after project award with only list of activities mentioned	0.33
	Government orders issued after project award with no details mentioned	0.17
	No specific government orders	0
Government Policy /Rules	Sectoral Policy in place during pre-award stage of the project with specific focus on PPPs	1
	Overall Policy (Centre and/or State) to the enactment of PPPs enacted during pre-award stage of the project	0.75
	Sectoral policy in place post-award of the project with specific focus on PPPs	0.5
	Overall Policy (Centre and/or State) to the enactment of PPPs enacted post-award of the project	0.25
	No policy/rules for PPPs	0
Judicial Precedents	Judicial systems remained in support of the PPP project through-out the pre-award stage	1
	Judicial systems did not support the PPP project earlier, but later on formed support during the pre-award stage	0.5
	Judicial systems were not supportive at all - pending cases remain	0

2. Normative Elements

Certain standards or norms which have been laid or practiced, may be not mandatory, but may be followed by majority of implementers are components of normative aspects. There could also be values or trends that may be currently followed owing to certain successful projects or best practices. For example, a pilot project for water supply distribution and networks project, use of model concession agreements and RFPs as prescribed by DEA. It must be noted that standards or norms are different from 'current trends'. Standardised templates and procedures help in speeding up the process of implementation, and create a favourable environment for governance of projects. For the purpose of this study, the normative elements considered include:

- Reference of standardised templates for contracts and bid processing
- Precedence of successful projects in the same sector or in the vicinity
- Presence of multilateral agencies, domestic agencies, consultants to provide technical and managerial support to the project

Category	Metrics	Scoring Rubric
Success Stories of PPPs	Lessons from both success and failure stories in the same sector have been drawn	1
	Only success stories studied in the same sector	0.66
	Only failure stories studied in the same sector	0.33
	No projects studied	0
Standardised Procedures & Templates (also from toolkits)	Standardized procedures, templates used widely on PPP projects adopted on the project	1
	Standardized templates and procedures are present but not widely used	0.66
	No standard procedures and templates but visible thrust to establishment	0.33
	No standardization in place	0
Presence of Multilateral Agencies	Presence of multilateral agencies with financial, technical and advocacy support	1
	Presence of a multilateral agency with financial and technical support	0.66
	Presence of a multilateral agency with only financial support	0.33
	No presence	0
Presence of Domestic Agencies	Presence of multiple domestic agencies with feasibility, DPR and transactions support	1
	Presence of multiple/single agencies with feasibility study and DPR support	0.66
	Presence of a single domestic agency with only feasibility/DPR/Transaction advisory support	0.33
	No presence	0
Presence of Consultants	Multiple Consultants with very strong support to implement the project as PPP	1
	Consultant with scope only in shaping phase of the project and strong support for PPPs	0.66
	Consultants with limited role in feasibility studies/ Transaction advisory	0.33
	No presence	0

3. Cultural-Cognitive Elements

Having a project champion (especially from the public sector) is essential to ensure smooth implementation of the PPP project, as he/she plays a critical role in the institutional environment. Also, a general acceptance amongst the leaders/implementers accompanied with political stability in the state for PPPs creates a positive ambience amongst all stakeholders to continue with the PPP project and work out remedies. Some states have historically been unfavourably disposed to PPPs, therefore even if a project offers positive VfM if implemented on a PPP, it cannot be undertaken due to the strong cognitive opposition. Such factors significantly impact the success in implementation of the PPP project and its sustainability, thereby establishing its rationale for assessment. The cultural cognitive elements considered in this framework include:

- Presence of project champion(s)
- Orientation of the implementing agency (ULB/ State) towards PPPs and political stability
- Established practice/precedence of PPPs by the implementing agency

Category	Metric	Scoring Rubric
Presence of a Project Champion	Strong champion from the government side at a senior level	1
	Strong champion at a mid level	0.75
	Champions from outside the project	0.5
	Champions with on and off support	0.25
	No champions	0
Orientation of the ULB and Political Stability	Continuous and stable support for a PPP by the ULB for technical, financial and excellence reasons with a stable government support and no regime change	1
	Continuous and stable support for a PPP by the ULB for technical, financial and excellence reasons despite a volatile political environment subject to regime change risks	0.66
	Limited support from ULBs with no change in government and stable regime	0.33
	On and off support for PPPs by ULBs, primarily attributable to change in government and regime	0
Established Practise of PPPs	A majority of projects executed through PPPs but other forms are also taken up (> 50%)	1
	Moderate number of PPPs (25-50%)	0.66
	A few projects under PPP mode (5- 25%)	0.33
	No PPP Projects (other than this one)	0

II. Project Characteristics

Apart from the institutional factors that act as incident conditions, certain characteristics of the project that have been embedded within them are likely to influence the post award outcomes. These characteristics are those over which the implementing agency has quasi-control, as they are inherited by the project during its identification and conceptualisation stage.

1. Experience of Project Participants

The outcomes of the project also depend on the capability and capacity of the agencies in charge of the project throughout the PPP life cycle. In this study, the experience of the concessioning authority, concessionaire and the consultant for carrying out the feasibility study, preparing the project DPR and conducting transaction advisory have been measured. Experience of other project participants such as third party auditor and engineer, as well as financiers is not considered.

Category	Metric	Scoring Rubric
Experience of the Public Sector	More than 1 PPP project already implemented in the sector	1
	A few PPP projects at operational stage	0.8
	A few PPP projects at construction	0.6
	A few PPP projects at pre-award stage	0.4
	Attempted PPPs, but project(s) got terminated	0.2
	Experience limited to this PPP project	0
Experience of the Private Sector	Private sector has substantial experience in both procuring and implementing PPPs	1
	Private sector has substantial experience in procuring but minimal experience in implementing PPPs	0.66
	Private sector has attempted a few PPPs, and are at various stages of procurement and/or implementation	0.33
	Private sector and the public sector has substantially no experience in PPP projects.	0
Experience of the Consultants	Consultant has substantial experience in PPPs	1
	Consultant has started off on PPP projects with a few PPP experiences	0.66
	Consultant has enough experience in PPPs, with a number of projects experiencing technical deviations	0.33
	Consultant has no substantial experience in PPP projects.	0

2. Uncertainty and complexity of the projects

Project cost may not be the ideal way to assess the complexity of the project, as it does not define the risks transferred from one agency to another. Co-ordination between stakeholders and other agencies for permits, etc. increase the complexity of the project. Further, unavailability of data to define project scope and estimate future demand increases the uncertainty. Apart from technical uncertainties, financial ambiguity in terms of cost recovery and willingness to pay for services also adds to the complexity/viability of the project.

Category	Metric	Scoring Rubric
Project Arrangement	BOT Multiple responsibilities – Precise output specifications	1
	BOT Multiple responsibilities – Imprecise output specifications for each responsibility	0.8
	BOT Single responsibility – Precise output specifications	0.6
	BOT Single responsibility – Imprecise output specifications	0.4
	EPC[1] + O&M[2]	0.2
	O&M or EPC	0
Project Dependencies	More than 10 agencies to co-ordinate with	1
	5-10 agencies to co-ordination with	0.66
	Less than 5 agencies	0.33
	No agencies to co-ordinate with	0
Uncertainty in Demand & Cost Recovery	No competing facility and high willingness to pay	1
	No competing facility and low willingness to pay	0.66

	Competing facility and high willingness to pay	0.33
	Competing facility and low willingness to pay	0
Data Uncertainty	DPR with full details + additional information provided	1
	DPR with not much specifications + additional information provided	0.66
	DPR provided to the concessionaire with detailed specifications	0.33
	DPR provided to the concessionaire with not detailed specifications/ No DPR provided	0

Project Governance Mechanisms

As mentioned previously, PPP projects face a number of uncertainties due to their long term nature. Therefore, governance mechanisms have to be built in from the initiation stage onwards .These governance mechanisms can be adopted at either stages of pre and post award of projects; and cut across various interfaces between stakeholders.

1. External interface

The mechanisms undertaken by the project consortium (public and private) to govern/manage the project while dealing with the societal stakeholders and beneficiaries are considered under the external interface. These strategies are not institutionalised but may vary from project to project. Communication with the beneficiaries is important, especially for social sector projects to understand their expectations, willingness to pay, etc. However, sharing data and getting feedback on the project depends on the understanding and sophistication amongst the beneficiaries and political stability. Involving the project affected people right from the beginning along with defining a clear process for engaging them is critical.

Category	Metric	Scoring Rubric
Fair Process of Stakeholder Involvement	Active partnership by societal stakeholders on the PPP project (IEC activities) with integration of informal workers	1
	Substantial community involvement (IEC activities) for across project implementation cycle	0.66
	Community informed about the project but no feedback taken/ Community informed but not enough support from them	0.33
	No process at all	0
Information Disclosure on the Project	Publicly available in detailed information of the project and various modes of communication used	1
	Various modes of communication used to reach out to community, but not detailed information shared	0.66
	Limited usage of various modes of communication	0.33
	No disclosure of information	0
Feedback from Stakeholder Community	Feedback taken from customers right from the start of operations of the system	1
	No feedback taken	0

2. Internal interface

Internal interface governance mechanisms include strategies undertaken by the project consortium (public and private) to manage disputes/issues that arise amongst them across the project lifecycle. Again these mechanisms may not be institutionalised but may vary from project to project. A strong understanding between the concessionaire and the concessioning authority helps in undertaking the right mechanisms to ensure smooth project implementation, despite delays or other issues. This relationship between the two parties may not only be contractual in nature - but can also be a mutual agreement between the two.

Category	Metric	Scoring Rubric
Innovations in Project Management	Measures with innovative practices to track the project and monitor it	1
	Sufficient project management and control measures present and followed	0.8
	Sufficient project management and control measures present but not religiously followed	0.6
	Project control mechanisms specified are not sufficient	0.4
	Project control mechanisms specified, are not sufficient and not followed	0.2
	Absence of project organization, control and tracking measures	0
Resolution of Conflicts	Concession mentions various means to resolve a conflict and the clauses view both parties fairly	1
	Concession mentions various means to resolve a conflict but the process of resolution is dominated by public sector	0.66
	Insufficient and ambiguous dispute resolution mechanism clauses in the concession agreement with dominant public sector dictating the terms if difference arise	0.33
	Sufficient clauses to resolve conflicts not specified	0
Provision of Performance Linked Payments	Provisions made for bonuses/penalties applicable to both the concessionaire and the concessioning authority for fullfilling/not adhering to key performance indicators	1
	Provisions made for performance linked payments during the operations and construction period for the concessionaire	0.66
	Provisions made only for the concessionaire for meeting key service parameters during operations or construction stage	0.33
	No provision for performance linked payments for both public and private sector	0
Grant by Government	More than 50% of project cost	1
	Between 25 to 50 percent of project cost	0.66
	Less than 25% of project cost	0.33
	No grants	0
Flexibility of Contracts	Contract structures have flexibility for the concessionaire to test the project as a part of the conditions precedent	1

	Contract structure have flexibility offered to the concessionaire to change the scope of the project during project cycle and variation in demand	0.66
	Contract structures have flexibility in variations in demand and/or provisions for revision of fees (as per WPI), scope of project	0.33
	No flexibility in the contract structures	0
Financial Buffers on Projects	Project having different financial buffers and strong market linkages	1
	Projects having various financial buffers but with poor market linkages	0.8
	Projects having limited kinds of buffers like escrow accounts but still dependent of government subsidy/ other sources of revenue	0.6
	Project heavily dependent on cross subsidisation	0.4
	Project heavily dependent on government subsidy/ payments for viability	0.2
	No financial buffers or any kind of government support	0

3. Public sector interface

Public sector interface refers to the processes adopted by the government while dealing/co-ordinating with project stakeholders (such as consultants, other government agencies) other than the locally affected community and the private concessionaire.

Public sector agencies/contracting authorities co-ordinate with all the stakeholders of the project, and are the common point of contact in case of any issues that may arise. Therefore, the processes adopted by them to co-ordinate with each stakeholder - such as the consultants, funding agency, concessionaire, beneficiaries, independent engineer are critical for project implementation.

More importantly, if things go beyond the control of these agencies, thereby making it challenging for the concessionaire to continue with its activities, it is expected that the contracting authority interfere and take a decision that does not affect any party. The capability of the contracting authority to do so has a greater impact on the project's post award project performance.

Category	Metrics	Rating Rubric
Rigor in Project Shaping	Iterative process involving a number of consultants, where all the aspects of project discussed and stakeholder meetings	1
	Iterative process involving a number of consultants but not involving various stakeholders/ Special feasibility studies and DPR by consultants who little communication with government during the process	0.66
	Various aspects of the project subject to studies with limited consultations with government and no iterative feedback	0.33
	Usual feasibility studies and DPR with appointment of consultants and calling of bids/ No DPR or feasibility study undertaken	0
Continuity of Project Officers	Significant amount of time spent by govt. officials with dedicated organizations	1

	Significant amount of time spent by govt. officials without any specific organization	0.75
	Officers responsible for different phases of the project	0.5
	Officers usually responsible for various stages of the project but with few transfers in between	0.25
	Frequent transfer of officers without any relationship to phases of the project	0

Project Outcomes

1. Performance

Performance of the project shall be measured on the basis of the improvement in services from pre-PPP to its post – PPP implementation; and also its compliance with the rules and/or benchmarks set in the concession agreement. Each of these service parameters have been customised for each sector, as provided in the table below:

Urban Roads	Municipal Waste Management	Urban Water Supply
Lane availability of roads (%)	Level of source segregation	Frequency of water supply
Average vehicle speed	Collection efficiency of waste	Coverage of tap water connections
Increase in utilization (passenger car equivalents per hour) pre and post infrastructure development	Quantum of waste processed as a percent of waste collected and generated	Reduction in non revenue water
	Amount of waste being dumped in the dump yard	Compliance with CPHEEO Rules
Other asset specific indicators (e.g. for assets such as bus depots, bridges etc.)	Reduction in carbon footprints Compliance with MSWM Rules, 2000	Reduction in customer complaints

The performance of each project has been coded based on the respective service level benchmarks, any disruptions that have been caused in the service delivery during operations stage as well as termination of the project.

Category	Metric	Scoring Rubric
Sustained Performance of the Project	The project has delivered services efficiently and was fully compliant with all rules	1
	The project has delivered services efficiently and was partially compliant with the rules (partial disruptions)	0.66
	The project has delivered services with partial efficiency as well as partial compliance with the rules (fair amount of disruption in delivery)	0.33
	Poor efficiency and non-compliance with the rules/ Termination of the Project	0

2. Financial Sustainability

The financial sustainability of the project measures the deviation in the actual revenues earned by the private sector during the course of the project life cycle, vis-a-vis the anticipated revenues during award of the project. Financial sustainability is an important project outcome as it keeps the private sector motivated towards delivering the services. Parameters that have been used to assess the financial sustainability of the project include, achievement of break even before or after the estimated year, actual versus estimated internal rate of return, improvement in collection efficiency and annual operations cost recovery.

Category	Metrics	Scoring Rubric
Financial Sustainability of the Project	Project revenues exceeded the estimates throughout the life of the project (COD till date)	1
	Project revenues sustained over the life with minor periods where the revenues were disrupted	0.75
	Project revenues remained either low or reached the expected levels throughout the life of the project	0.5
	Project revenues usually low to what was expected with intermittent periods of high usage	0.25
	Project revenues usually lower than expectations throughout the life of the project (from COD till date)/ Project got Terminated	0

3. Adaptability

Adaptability of the project measures the ability of the project stakeholders to adapt to the changing circumstances which have been accommodated in the concession agreement. The concession agreement attempts to capture some foreseeable uncertainties such as changes in volume and demand, achievements in the performance indicators and among others. The ability of the project stakeholders to adapt to these pre-decided structures is an important parameter to measure the outcome of the project post-award. The table below depicts the coding for measuring 'adaptability' of the project based on its deviations from the contract structures.

Category	Metrics	Scoring Rubric
Adaptability of the Project	All adaptations to the project were done according to the concession agreement with the involvement of an independent reviewer/regulator	1
	A majority of adaptations were undertaken according to the concession agreement with the involvement of an independent third party reviewer /regulator	0.8
	Few adaptations were undertaken according to the concession agreement, with the involvement of an independent third party reviewer	0.6
	Few adaptations were at the sole discretion of the concessioning authority and were not in line with the concession agreement	0.4

	No adaptations were made as per the concession agreement and the project was continued with maintenance of status quo	0.2
	No adaptations were made as per the concession agreement and this resulted in termination of contract	0

4. Restructuring

Restructuring could take place in various aspects of project scope such as the financial model, concession period due to delays in approvals, among others. Successful restructuring of the project without any disruptions of increased renegotiation costs or service delivery to the project beneficiaries, is considered to have the highest score. The restructuring of the project also measures the ability of the project stakeholders to resolve issues through the process of mutual agreements, outside of the original scope of the Concession Agreement.

Category	Metrics	Scoring Rubric
Restructuring of the Project	Successful restructuring with minimal disruptions to service/ No restructuring was required	1
	Successful restructuring with major disruptions to service	0.66
	A few components agreed for restructuring but was undertaken after prolonged disruption of service	0.33
	Restructuring was not undertaken or was rejected by one of the parties, resulting in major disruptions to service delivery	0

5. Legitimacy

Political disruptions and litigations due to opposition against the private sector participation, willingness to pay for higher user charges, etc; may delay or terminate the project; and hence is an important parameter to assess the outcome of the project. The legitimacy of the project is measured by the stability of the political environment, changes in regulations, campaigns or litigations by opposition parties and beneficiaries.

Category	Metrics	Scoring Rubric
Project Legitimacy	The ULB regime was stable, there were no litigations/pending cases and no opposition by the users on the project with willingness to pay use charges	1
	The ULB regime was stable, there were no litigations but there was opposition from users to pay tariffs for the services	0.75
	The ULB regime was unstable, there were litigations and pending cases, but there was no opposition from the users to pay tariffs for the services	0.5
	The ULB regime was unstable, but there were no litigations/pending cases or opposition to pay tariffs for the services	0.25
	The ULB regime was unstable, there were litigations and pending cases, and there was opposition from users to pay tariffs for the services	0

The next section focuses on the application of the framework on select public private partnership projects in India in urban infrastructure sectors.



Case Studies and Analysis Methodology

The '*post-award*' governance framework developed has been applied to nine case studies selected across sectors of urban water supply and distribution, municipal solid waste management and urban transport (roads and bus stations). These PPP projects have been implemented in the states of Tamil Nadu, Maharashtra, Karnataka and Kerala. Following were the criteria for selection of case studies to ensure a combination of context homogeneity and outcome diversity:

(1) Number of years of operations

PPP projects with more than two years of operations have been considered as it would provide enough scope to analyse the 'post-award' project outcomes. This would also ensure that a number of factors at different stages of project implementation would have contributed to these outcomes. This criterion led to selection of PPPs from the above mentioned states as these governments were among the early pioneers of PPP projects in the urban infrastructure sector.

(2) PPP type and complexity

The projects covered have been implemented through BOT (toll and annuity) mode or as a management contract, where in significant risk transfer, both technically and financially to the private sector has been observed. Also, these projects are integrated or focus on those aspects of the sector value chain which are capital intensive. Moreover, the selection of case studies is driven by the need to capture diversity in risk profiles.

The list of PPP projects studied include:

Project	Location	PPP Type	Project Cost (INR crores)	Award	Scope	Contracting Agency	Concessionaire
Coimbatore Solid Waste Management	Coimbatore, Tamil Nadu	BOT – Annuity	68	2007	Processing & Scientific Land Filling	Coimbatore City Municipal Corporation	Bharuch Enviro and United Phosphorous
Madurai Solid Waste Management	Madurai, Tamil Nadu	BOT – Annuity	57	2008		Madurai Municipal Corporation	SPML
Pune Waste to Energy Project	Pune, Maharashtra	DBFOT	120	2010		Pune Municipal Corporation	Concord Blue Technology
Nagpur Water Supply	Nagpur, Maharashtra	BOT (performance linked)	376	2010	Distribution & Operations	Nagpur Municipal Corporation	Veolia and Vishwaraj
Latur Water Supply	Latur, Maharashtra	Management Contract	139	2008		Maharashtra Jeevan Pradhikaran	SPML
24*7 Water Supply in 3 Cities in Karnataka	Hubli-Dharwad, Gulbarga, Belgaum, Karnataka	Management Contract	70	2004		KUIDFC	Veolia Water
Trivandrum City Roads Improvement Project	Thiruvananthapuram, Kerala	BOT – Annuity	102	2004	Construction & Maintenance of City Roads	Kerala Road Fund Board	IL&FS Transport Network Ltd.

Thavakkara Bus Station	Kannur, Kerala	BOT (user fee based)	37	2004	Integrated	Kannur Municipality	KK Builders
Mattanchery Bridge	Cochin, Kerala	BOT Annuity	27	1999	Integrated	Greater Cochin Development Authority	Gammon India

Consultations with stakeholders of these projects were conducted to understand the factors and assess the reasons and contributors to the project outcomes. The key stakeholders consulted for each PPP project are concessionaires, concessioning authorities, domestic support agencies, financiers, transaction advisors and other consultants and non-government organisations that have played a role in project implementation. Project documents such as detailed project reports, concession agreements, bid documents and O&M manuals were collected and studied in depth to capture the incident conditions that would impact project outcomes. The exhibit below shows the coverage of the stakeholder consultations across the project life cycle.

The insights and research generated through consultations and project reports have been documented in two forms: first, as in-depth case studies provided in the annexure and the other as the scaling of the factors as per the 'post-award' governance framework developed.

The insights generated through stakeholder consultations and project documents have been captured in the scoring scheme of the framework developed in the earlier section. A quick glance at the scales assigned to each input and output factor for each PPP project have been provided in the table below:

	Input parameters	TBS	NWS	LWS	MSWM	CSWM	TCRIP	NMB	KUWASIP	PSWM
Legislative	Legislations	0.2	0	0	0.2	0.2	0.8	0.6	0.2	0
	Government Ordinances							0.66		
	Government Policy/Rules	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.75	0.25
	Judicial Precedents	1	1	1	1	1	1	1	1	1
Normative	Success Stories of PPPs	0	0.66	0	0.66	0	0	0	1	0
	Standardised Procedures & Templates	0.33	0.33	0.33	0.33	0.33	0	0	1	0
	Presence of Multilateral Agencies	0	0	0	0	0	0	0	1	0
	Presence of Domestic Agencies	1	0	0	0	0	0.33	1	1	0
	Presence of Consultants	1	0.66	0.33	1	0.66	0.66	0.66	0.33	0
Cognitive	Presence of a Project Champion	0	0	0	0	1	0.75	0	0.75	1
	Orientation of the ULB and Political Stability	1	1	0	0	0	0.66	0.66	1	1
	Established Practise of PPPs	0	1	0.33	0	0.33	0.33	0.33	0.66	1

Experience	Experience of the Public Sector	0	1	0.2	0.2	0.4	0.4	0.2	0.8	0.8
	Experience of the Private Sector	0.33	1	0.66	0.66	1	1	1	1	0.33
	Experience of the Consultants	1	1	0	1	0.33	1	1	1	0
Project Characteristics	Project Arrangement	1	0.6	0.2	0.6	0.6	1	1	0.2	0.4
	Project Dependencies	0.66	0.66	0.66	1	1	0.66	0.33	0.66	0.66
	Uncertainty in Demand & Cost Recovery	0.33	1	0.66	0.66	1	1	0	1	0.33
	Data Uncertainty	0.33	0.66	0.33	0.33	0.66	0.33	0.33	1	0
External Interface	Fair Process of Stakeholder Involvement	0.33	0.66	0.33	0	0.66	0.33	0.33	0.66	0
	Information Disclosure on the Project	0.33	1	0.66	0	1	1	0.33	0.66	0
	Feedback from Stakeholder Community	0	1	0	0	0	0	0	1	0
Internal Interface	Innovations in Project Management	0.6	0.8	0	0.6	0.6	0.6	0.2	1	0.4
	Resolution of Conflicts	1	1	0.66	1	1	0.66	0.66	1	0.33
	Provision of Performance Linked Payments	0.33	0.66	0	1	1	0.33	0	0.33	0
	Grant by Government	0	1	0	1	1	0	0	1	0
	Flexibility of Contracts	0.33	0.33	1	0.33	0.33	0.33	0.33	0	0
	Financial Buffers on Projects	1	1	0	0.8	0.8	0.2	0.6	0.4	0.6
Public Interface	Rigor in Project Shaping	0.33	1	0.33	0.33	0.66	1	0.33	1	0
	Continuity of Project Officers	0.25	1	1	0.25	0.75	0.5	0.25	0.75	1
Post Award Outcomes	Sustained Performance of the Project	0.66	1	0	0.33	0.66	1	1	1	0.66
	Financial Sustainability of the Project	0.75	0.75	NA	0.75	0.75	0.75	0.25	0.75	0
	Adaptability of the Project	0.4	0.2	0	0.2	0.4	0.4	0.2	0.4	0.4
	Restructuring of the Project	1	1	0	1	1	1	0	1	1
	Legitimacy of the Project	1	1	0	1	1	0.5	0	0.75	1

* TBS Thavakkara Bus Station, NWS Nagpur Water Supply, LWS Latur Water Supply, MSWM Municipal Solid Waste Management, CSWM Coimbatore Solid Waste Management, TCRIP Trivandrum City Roads Improvement Project, NMB New Mattanchery Bridge, KUWASIP Karnataka Urban Water Supply Improvement Project, PSWM Pune Solid Waste Management

A Qualitative Comparative Analysis (QCA) tool was applied to establish the linkages between these input factors and the project outcomes. The QCA is essentially a conjunctive assessment tool, which helps identify pathways which lead to specific outcome sets, especially for small to mid size data sets. The QCA assessment was identified for the following reasons:

1. It provides powerful tools for the analysis of causal complexity: With QCA, it is possible to study causal conditions that are insufficient but necessary parts of causal recipes which are themselves not necessary but sufficient. In other words, using QCA it is possible to assess causation that is very complex, involving different combinations of causal conditions capable of generating the same outcome. This emphasis contrasts strongly with the "net effects" thinking that dominates conventional quantitative social science. QCA also facilitates a form of counterfactual analysis that is grounded in case-oriented research practices.
2. QCA is ideal for small-to-intermediate-N research designs: QCA can be usefully applied to research designs involving small and intermediate data samples (example, 5-50). In this range, there are often too many cases for researchers to keep all the case knowledge "in their heads," but too few cases for most conventional statistical techniques.
3. QCA is a method that bridges qualitative and quantitative analysis: Most aspects of QCA require familiarity with cases, which in turn demands in-depth knowledge (which in this case has been captured in the framework through a Delphi process). At the same time, QCA is capable of identifying decisive cross-case patterns, the usual domain of quantitative analysis. QCA's examination of cross-case patterns respects the diversity of cases and their heterogeneity with regard to their different causally relevant conditions and contexts by comparing cases as configurations.



Results

The QCA has been applied to the 'post-award' governance framework for the PPP projects identified and studied. This section provides the results of the model and explains causal pathways for each outcome indicator, through use of examples.

I. Performance

There are four causal pathways that ensure continued performance of the PPPs. Each of these has been provided in the table below. Following are the inferences that can be drawn from these pathways:

(1) *Cognitive elements (presence of project champion, orientation of the ULBs, political stability and established practice of PPPs) are essential to ensure sustained performance of PPP projects.*

As can be seen from the case studies highlighted, Pune Solid Waste Management Project had the highest level of cognitive presence through continued presence of the key officer in charge for waste management services, who has implemented a number of other performing projects in the sector since 2008. Other projects which possessed such characteristics include Nagpur Water Supply and Coimbatore Solid Waste Management projects among others mentioned in the table below.

Cases	Causal Pathways							
NWS, TBS, CSWM	Buffer	Innov	Complex	Norm	Cognitive			
NMB	Buffer	Regul	Complex	Norm	Cognitive	Continuity		
PSWM	Buffer	Regul	Complex	Norm	Cognitive			
KUWASIP	Innov	Regul	Complex	Norm	Cognitive	Continuity	Rigor	Equity

Absence of elements Presence of elements

(2) For Complex PPP projects, apart from cognitive element, normative aspects (such as lessons drawn from other PPPs in the same sector, application of standardised documents, presence of consultants and domestic agencies), innovative project management practices and financial buffers emerge as necessary conditions.

The QCA results indicate five such projects which being complex in nature along with a cognitive and normative presence have combinations of financial buffers, innovative project management practices and regulatory element, that have contributed to PPP performance. Innovative project management practices have been adopted by water supply projects in Nagpur and KUWASIP, wherein technological interventions such as SCADA have been implemented to monitor key performance indicators. Also, project management practices include assigning a third party engineer or designing a project management agency with joint representation from public and private sector. This can be observed in the cases of Thavakkara Bus Station project where ICICI Kinfra is the independent engineer.

Examples of financial buffers include establishment of escrow account, subsidised user charges/tariffs, mechanisms to generate revenue from other sources and provisions for borrowing loans from the government during the operations and management stage. Such buffers were incorporated into a few projects such as the Nagpur Water Supply project, wherein Nagpur Environment Services Ltd. (NESL) has been incorporated to ring fence the water supply and sewerage sector. The escrow account is managed by NESL to make performance linked payments to the concessionaire. Also, a Water Supply and Sanitation Fund has been formed to provide funds to the concessionaire in case of any shortage during operations. Similarly, for Thavakkara Bus Station, the concessionaire could explore different sources of revenue within the given built-in area of the commercial complex. The concessionaire constructed a three-star hotel to increase its revenue. Also, the concession agreement allows the concessionaire to withdraw up to 35% of the deposits collected from tenants during the operations stage and earn interest on the remaining amount. Lastly, for Coimbatore Solid Waste Management and New Mattanchery Bridge projects, escrow accounts were established to handle the revenues and make payments to the concessionaire.

(3) For Simple PPP Projects, in the absence of regulative and normative aspects, financial buffers along with cognitive elements are necessary for project performance.

Pune Solid Waste Management is one such example for simple projects characterised by disintegrated value chain, inflexible technologies and imprecise output specifications. In the absence of two institutional elements of regulations and normative aspects, presence of cognitive element is essential along with limited financial buffers such as escrow account.

This pathway is of interest in cases where there are no strong regulative or normative elements present (which typically require some gestation time to bear fruit), but where the project is also simple (in terms of revenue and cost side volatility). In such cases, as a number of ULBs might face, project specific interventions such as financial buffers can be instituted to secure performance, when anchored by a strong project champion. *Hence, for simple projects, high level of institutional reforms might not be always necessary to secure performance as long as project specific interventions are put in place.*

II. Financial Sustainability

(1) *Normative elements are essential for complex PPPs to ensure financial sustainability, in the absence of regulations and irrespective of the presence of cognitive elements.*

As for financial sustainability, normative elements such as use of standardised processes and documents, presence of domestic agencies, consultants and multilateral organisations in project shaping are essential. The two solid waste management projects from Tamil Nadu (Madurai and Coimbatore) had substantial presence of such elements. The Coimbatore Solid Waste Management project had a local consultant to prepare the project reports, which were further reviewed by IL&FS.

Cases	Causal Pathways							
NWS, TBS, CSWM	Buffer	Innov	Regul	Complex	Norm	Cognitive		
NWS, MSWM, CSWM	Buffer	Innov	Regul	Complex	Norm	Perf	Equity	
KUWASIP	Continuity	Innov	Regul	Complex	Norm	Cognitive	Equity	Rigor

Absence of elements Presence of elements

As an example of prior projects in the vicinity shaping others in the same sector, the Madurai Waste Management project had drawn lessons from the Coimbatore project and was implemented on very similar characteristics. Moreover, a number of consultants were involved during the project life cycle to support the concessioning authority, one each for the feasibility study and preparation of DPR, bid process management and operations advisory.

(2) *For Complex PPP projects, in the absence of regulations, normative elements, innovative project management practices and financial buffers are necessary conditions for financial sustainability.*

Innovative project management practices and financial buffers are governance strategies within the internal interface, which are relevant for complex PPP projects not only for performance, but also for financial sustainability. Examples of such mechanisms have already been discussed in the previous section.

III. Adaptability

(1) *Cognitive element (presence of project champion, orientation of the ULBs, political stability and established practice of PPPs) is essential to enhance adaptability of projects.*

For both complex and simple PPP projects, cognitive elements are essential for ensuring that projects are able to adapt by themselves given the incident conditions and the inbuilt mechanisms through mutual agreement between the project participants. The concessionaire of the Pune solid waste management project faced delays in getting approval from the State electricity regulatory agency on the price at which they wanted to sell power to the industries. These delays further led to the concessionaire not being able to expand the capacity of the waste processing plant, as by doing so their operational expenditure would increase. This increase in expenses is hard to recover given that there were no returns (in the form of sale of power). Although getting approvals from various agencies was under the purview of the private player, the Pune Municipal Corporation played an active role in approaching the regulatory agency and getting the approval for the concessionaire. Such cognitive presence in the project 'post-award' helped the parties to adapt to the already existing project structure and arrive at mutually agreeable mechanisms to ensure sustainable implementation.

Cases	Causal Pathways							
PSWM	Continuity	Buffers	Regul	Complex	Norm	Cognitive		
NWS, TBS, CSWM	Innova	Buffers	Regul	Complex	Norm	Cognitive		
KUWASIP	Contin	Innov	Regul	Complex	Norm	Cognitive	Rigor	Equity

Absence of elements Presence of elements

(2) *For complex PPP projects, apart from cognitive elements, normative aspects, innovative project management practices and financial buffers are necessary conditions for projects to be able to adapt to the designed features.*

In the Thavakkara Bus Terminus case, cognitive orientation (give and take) as well as presence of innovative financing mechanisms (flexibility in terms of alternate revenue streams was allowed to the concessionaire) played an important role in project adaptability. The payment from the concessionaire to the concessioning authority was revised based on an adaptive agreement with the concessionaire, involving revision of the FSI for greater revenue realisation.

Similarly, for the CSWM project, a change in scope involving capping of existing dump sites was handled adaptively with appropriate compensation discovery and award. These interventions helped in tiding the project over a hitherto unforeseen bottleneck (out of scope requirement), which was integrated into the revised schema of roles and responsibilities

IV. Restructuring

Cases	Causal Pathways							
PSWM	Continuity	Buffer	Regul	Complex	Norm	Cognitive		
NWS, TBS, CSWM	Innov	Buffer	Regul	Complex	Norm	Cognitive		
TBS, CSWM	Innov	Buffer	Regul	Complex	Norm	Equity	Perf	
KUWASIP	Innov	Continuity	Regul	Complex	Norm	Cognitive	Rigor	Equity

Absence of elements Presence of elements

(1) *For complex PPP Projects, normative elements are essential to avoid restructuring of projects or successful restructuring of projects without any disruptions. Moreover, in the absence of regulations, these projects must be supplemented with innovative management practices and financial buffers*

The Trivandrum City Road Improvement Project, for instance, provides an example of a complex project (complex on account of both, the relatively new concept of urban roads being implemented on a PPP, as well as the land acquisition complexities involved), which had to adapt to accommodate for the cost escalations which happened on account of project delays. The availability of a financial buffer (via the Kerala Road Development Fund) was

integral to achieving this and smoothening out cash flow issues. On the other hand, the Latur Water Supply project serves as an example of a complex project where restructuring was attempted, but was not successful on account of lack of conjunctive presence of the above mentioned elements.

(2) *Where rigid institutional structures (normative and regulative) are absent and when projects are simple, continuity of project officers and cognitive elements are essential to avoid restructuring of PPP projects.*

An instance of this causal pathway is observed in the Pune Solid Waste management project, where adaptation to shifts in the operating environment has been supported by strong cognitive orientation and continuity of project champions from the concessioning authority side.

V. Legitimacy

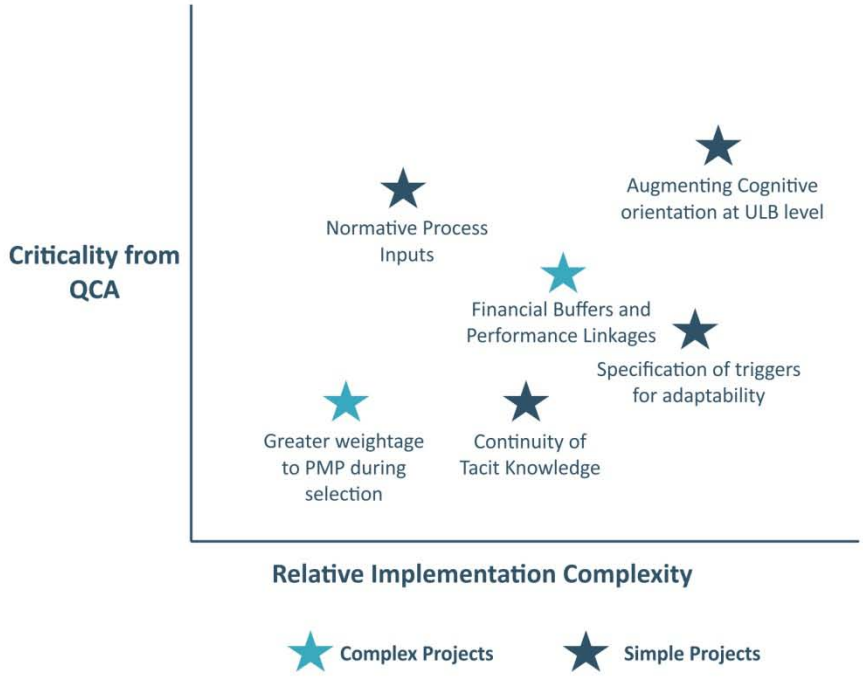
Cases	Causal Pathways						
MSWM, TBS	Info	Regul	Norm				
PSWM	Info	Regul	Complex	Continuity	Cognitive		
KUWASIP, NWS	Info	Feedback	Norm	Continuity	Process	Rigor	Cognitive

Absence of elements Presence of elements

We find that for simple PPP projects (e.g. non integrated value chain with absence of direct interface with project beneficiaries/community), the community management mechanisms can be simple, extending only to information disclosure.

However, complex PPP projects seem to require both information dissemination (during project preparation) as well as feedback from beneficiaries/users at each stage of implementation to ensure legitimacy. Given that community involvement is a key requisite for long term success for such complex projects, the community also needs to feel empowered and have stake in the project success. Typically, this is possible only when the community is actively involved in design/ structuring and risk sharing decisions which go into the contract structure itself.

The assessment has identified six potential areas of action to enhance PPP outcomes. These have been categorised on the basis of relative complexity of implementation (time and cost, coordination), as well as the relative criticality for outcomes according to our analysis.



No.	Area	Notes
1	**Augmenting Cognitive Orientation**	
1.1	Summary	Positive cognitive orientation of project champions (at ULB level) is closely related to successful outcomes across categories (especially to financial sustainability irrespective of presence of Government Grant)
1.2	Outcomes	Multiple
1.3	Applicability	Simple and Complex projects
1.4	Status Quo	JnNURM has supported capacity building interventions, with the allocation increasing in the last round
1.5	Suggestions from stakeholders	• Creation of corps of officers who can be deputed for projects • Tying grants to capacity assessment • Conceptual understanding of PPPs in addition to procedural implications
1.6	Next Steps	Capacity building at ULB level could be a core component of the planned Smart City/ NUDM programmes. This capacity building could involve interactive modules with examples of live projects being assessed through their life cycles. Specific attention could be given to post award aspects of adaptability tied to changes in underlying factors
2	**Normative inputs**	
2.1	Summary	Across project categories (especially complex projects), normative elements play a vital role in ensuring success, at times offsetting weak regulations
2.2	Outcomes	Multiple
2.3	Applicability	Simple and Complex projects
2..4	Status Quo	The body of normative inputs generated by DEA and MoUD has significantly streamlined processes (DPR development, BPM) for ULBs
2.5	Suggestions	• State specific VfM toolkits • More toolkits on community management across project life cycle
2.6	Next Steps	Both MoUD and the 3P cell could consider development of the community management toolkits. State specific VfM development can be supported through financial and technical inputs
3	**Continuity of knowledge**	
3.1	Summary	Continuity of key project champions/ officials smoothens out interface issues which crop up at transition stages (especially construction closure operations)
3.2	Outcomes	Multiple

3..3	Applicability	Simple and Complex projects
3.4	Status Quo	The current documentation requirements comprehensively cover the process till the BPM stage. There is no work flow for capturing interactions between the concessionaire and the concessioning authority post award
3.5	Suggestions	• Whenever possible, ensuring continuity of project officials till operation steady state • Strong KT and MIS system to capture qualitative elements of Concessionaire – Concessioning Authority Community interface*
3.6	Next Steps	A framework for the such an MIS/ KT system can be developed across urban infrastructure PPPs. The framework presented in this report can be a starting point for the design of such a system
4	**Specification of triggers for adaptability**	
4.1	Summary	ULBs have barriers to adapting and mid course corrections, even in response to unfulfilled obligations on account of lack of pre identified triggers
4.2	Outcomes	Adaptability, Financial Sustainability
4.3	Applicability	Simple projects
4.4	Status Quo	Few CAs clearly mention triggers for flexibility on account of historical gaps in fulfilment of responsibilities from Concessioning Authority side, especially in commitments such as land acquisition
4.5	Suggestions	• Identification of triggers which are exogenous (to prevent gaming) and inclusion in Concession Agreements • Definition of clear methodology to compute cost escalations in the event of delays in land acquisition
4.6	Next Steps	The 3P cell could consider inclusion of explicit triggers for adaptability (within the ambit of the CA) before exploring restructuring alternatives
5	**Financial buffers and performance linkages**	
5.1	Summary	For complex projects (with high cost and traffic volatility), financial buffers and performance linked payments (both incentives and penalties) can help improve sustainability and reduce restructuring
5.2	Outcomes	Financial Sustainability, Restructuring
5.3	Applicability	Complex Projects
5.4	Status Quo	Performance linkages are already increasingly finding place in CAs. However, this is currently largely restricted to downsides (penalties)
5.5	Suggestions	• Alternative mechanisms of providing support through revenue facilitation (e.g. offtake of RDF for SWM, advertising rights for road projects etc.) and cost unbundling • Feasibility of setting up thematic financial buffers can be discussed with the States • Upsides to performance can be added to MCAs
5.6	Next Steps	Modification of MCAs, guidelines/ incentives for thematic buffers
6	**Greater weightage to Project Management Practices during selection**	
6.1	Summary	For complex projects, innovative project management practices (e.g. Use of GIS for monitoring, involvement of community etc.) can offset risks and enhance sustainability
6.2	Outcomes	Adaptability, Financial Sustainability
6.3	Applicability	Complex Projects
6.4	Status Quo	Project Management Practices are already is an identified component in technical evaluation of bidders
6.5	Suggestions	• Weightage given to PMP (both proposed PMP and evidence of past success) can be increased • A system of differential weightages based on complexity or riskiness of the project (evaluated during DPR stage) can be adopted
6.6	Next Steps	Augmentation of procurement guidelines



Inputs from one-on-one discussions with stakeholders

The findings from the assessment were shared through a set of discussions with four State Governments – Tamil Nadu, Kerala, Karnataka and Puducherry. These were conducted with the respective Planning/ Infrastructure Development Departments to identify the level of concurrence with the overall findings, and to elicit concurrence/ divergence on the causal pathways in light of other projects executed by the States.

While there was overall agreement and positive reception to the framework, States differed at times on potential mechanisms to address these issues. A summary of key inputs from these consultations is tabulated below:

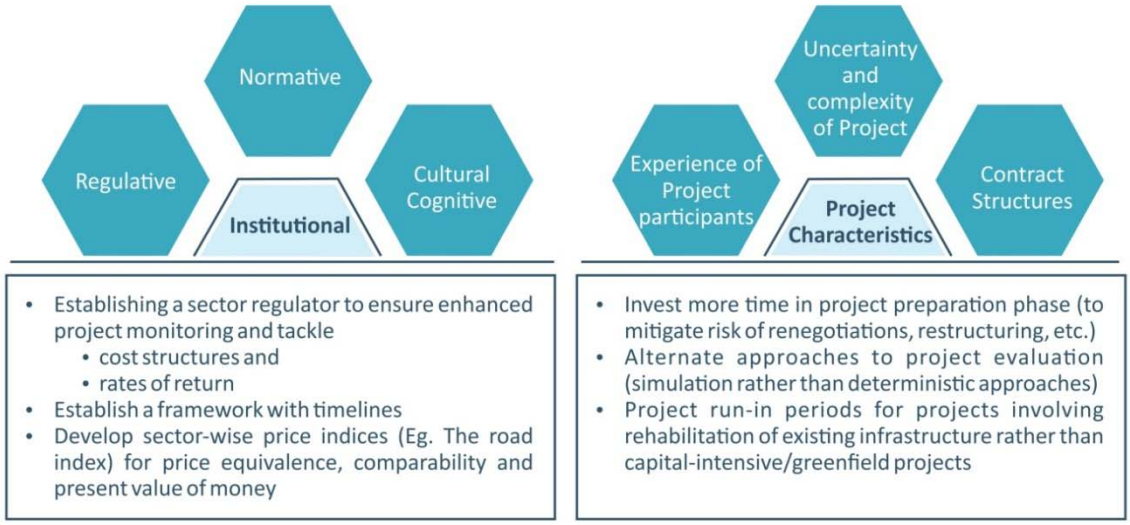
No.	Input	TN	KAR	KER	PUDU
1	Creation of a dedicated sector regulator to control tariffs and for overall economic regulation	Y		Y	
2	Performance and social audits of PPP projects, apart from financial projects			Y	
3	Renegotiation clauses defining trigger conditions and corresponding scope of and process for renegotiation			Y	
4	Urban Infrastructure and State specific Value for Money Toolkits	Y	Y	Y	Y
5	Explore cooperative projects with community involvement for urban infrastructure			Y	
6	Temporary deployment of PPP experts within each State cell for capacity building				Y
7	Mechanism for documentation and updation of PPP projects for internal knowledge transfer	Y	Y		

There seems to be convergence across the board on the importance of cognitive orientation, as well as normative strengthening (e.g. VfM toolkits). A spectrum of governance mechanisms, ranging from simple interventions (e.g. streamlined process and work flow for documentation and capture of all project specific information/ views for seamless transition across project owners) to structural and complex ones (e.g. creation of sectoral regulators for economic regulation of the projects) has been suggested.

Renegotiation and flexibility emerges as an area of significant divergence. While some States believe that incorporation of renegotiation triggers in agreements would help in weathering future market fluctuations, some States believe that this could make the system prone to gaming during the bidding stage. While there is qualitative agreement on the merit of a

positive attitude to renegotiation, there seem to be differences (based on prior experience) on how mature the various parties are in neutrally and transparently approaching the topic.

Further to the discussion with State Governments, a roundtable with the infrastructure financing community was undertaken in order to get their inputs on specific governance instruments to enhance transparency and financial sustainability and a mechanism for handling mid course corrections (adaptability and restructuring), along with their implications on financial sustainability and solvency. The roundtable discussion resulted in the following recommendations to enhance post-award governance outcomes, from the perspective of the infrastructure financing community:





It is interesting to note concurrence on some elements – e.g. transparent data capture and project governance, creation of a sector regulator. Meanwhile, it is also clear that some aspects of reform on the wish list of the private sector (e.g. timeline commitments on concessioning authority obligations, run in periods for BOT brownfield contracts) might not be immediately feasible given the lack of a supporting execution framework to make these

commitments work. However, as a positive sign, there have been several discussions and deliberations by the Government at multiple levels on these issues, which augurs well for timely resolution and way forward.



Next Steps

Institution of strong governance practices is a complex process which has several dependencies for implementation. This study creates a framework for evaluation of the existing levels of project risk from various sources (institutional, project specific and governance linked), and map the same to potential outcomes. While this by itself is not complete, it is an important first step.

Limited fiscal space and technical expertise within the Public Sector to carry out such complex projects make Public Private Partnerships necessary. As an encouraging sign, the Central Government, and several State Governments are taking active steps to mainstream PPPs among more traditional procurement processes. However, given that the risk profile of projects in the urban infrastructure sector are significantly higher than that of other commercial infrastructure, initiatives are required to enhance private sector confidence, while also ensuring that the Urban Local Bodies and the community realize value for money from PPP projects.

We envisage the following next steps to build on the findings of this exercise, and create measurable improvements to the risk profile and performance of Urban Infrastructure PPPs:

- **Expanding the framework to a larger set, on an ongoing basis -** While the study provides a framework for assessment of causal linkages between influencing factors, it has been applied on a small set of ongoing PPPs. Both the MoUD, as well as State Governments can apply such evaluation on a larger set of active projects under them to strengthen the confidence levels of the inferences which emerge on the causal recipes to various outcomes. This would also serve as a reliable decision source to provide feedback for policy and execution.
- **Achievement of immediate targets (MIS, Cognitive, Normative) -** The study points . to action points which could be immediate targets to achieve positive outcomes within a short turn around. Examples include creation of a system for capturing project information and proceedings post-award, extending the existing capacity building interventions beyond procurement (for life cycle management of projects), creation of sector specific and State specific VfM toolkits, and community interface management guides. These interventions can be turned around in a short time span.
- **Tying governance to funding -** The Smart City programme offers a valuable opportunity to tie funding to governance quality. Given that the Government is planning a "challenge framework" for funding smart cities, the framework can help evaluate governance readiness for PPPs of local governments, as this is a common success factor across multi sector PPPs (within urban infrastructure).



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